Claims

1. A power amplifying apparatus that performs linear amplification by using a nonlinear power amplifier, the power amplifying apparatus, comprising:

a signal converting section that converts an input signal of an orthogonal coordinate system to an amplitude signal and a phase signal of a polar coordinate system, that then converts the phase signal to an orthogonal-coordinate phase signal of the orthogonal coordinate system, and that outputs the amplitude signal and the orthogonal-coordinate phase signal;

a modulating section that performs orthogonal modulation on the orthogonal-coordinate phase signal, and that outputs the modulated signal to the nonlinear power amplifier; and

a correcting section that outputs a gain control signal for the nonlinear power amplifier,

wherein the correcting section has a correction table which is produced on the basis of an output signal of the nonlinear power amplifier and the input signal of the orthogonal coordinate system, and outputs the gain control signal with reference to the correction table on the basis of the amplitude signal.

2. A power amplifying apparatus that performs linear amplification by using a nonlinear power amplifier, the apparatus comprising:

a signal converting section that converts an input signal of an orthogonal coordinate system to an amplitude signal and a phase signal of a polar coordinate system, that then corrects the phase signal, that converts the corrected phase signal to an orthogonal-coordinate phase signal of the

orthogonal coordinate system, and that outputs the amplitude signal and the orthogonal-coordinate phase signal;

a modulating section that performs orthogonal modulation on the corrected orthogonal-coordinate phase signal, and that outputs the modulated signal to the nonlinear power amplifier; and

a correcting section that outputs a gain control signal for the nonlinear power amplifier, and a phase correction signal that is used in the correction of the phase signal in the converting section,

wherein the correcting section has a correction table that is produced on the basis of an output signal of the nonlinear power amplifier and the input signal of the orthogonal coordinate system, and outputs the gain control signal and the phase correction signal with reference to the correction table on the basis of the amplitude signal.

3. The power amplifying apparatus according to claim 1 or 2, wherein at least one of the signal converting section, the modulating section, and the correcting section is integrated into one chip.

4. The power amplifying apparatus according to any one of claims 1 to 3, wherein the correction table stores data that indicate an inverse characteristic of a nonlinear amplification characteristic that is calculated by using an LMS algorithm.